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• DISCOVER THE GIANTS OF THE PR WORLD •

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IDENTIKIT

Three more fascinating dinosaurs

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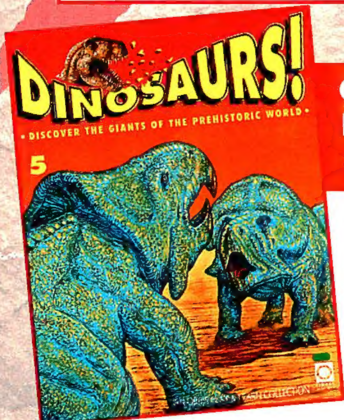
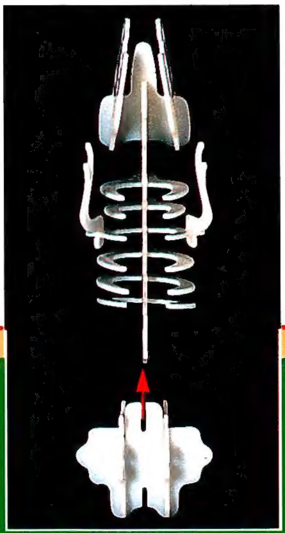


COMING IN PART 5 OF DINOSAURS!

Protoceratops, **the dog-sized dinosaur that gave scientists the first proof that dinosaurs laid eggs. You'll find this remarkable creature in IDENTIKIT, as well as *Syntarsus* and *Saurolophus*.**

PLUS The next parts of your fabulous glow-in-the-dark dinosaur model.

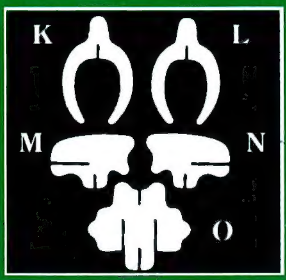


▲ How to attach the hips to the spine

HOW TO ASSEMBLE YOUR MODEL

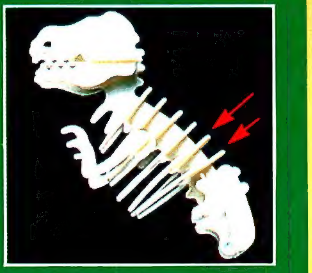
Insert rib K (the smaller) into the highest open slot on the spine. Insert rib L into the last open slot on the spine. Slide M and N into the outside slots of O. The long, smooth edges on M and N point the same way. Together, parts M, N and O form the hips. Using the longer slit, attach the hips to the slot on the spine, with the smooth edges uppermost.

◄ Assembled model from Part 3



◄ This issue's model parts

This issue's ► assembled model (and where to insert ribs K and L into the spine)



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BRACHIOSAURUS

***Brachiosaurus* was as long as a tennis court, as high as a three-storey house and weighed as much as 10 large elephants.**

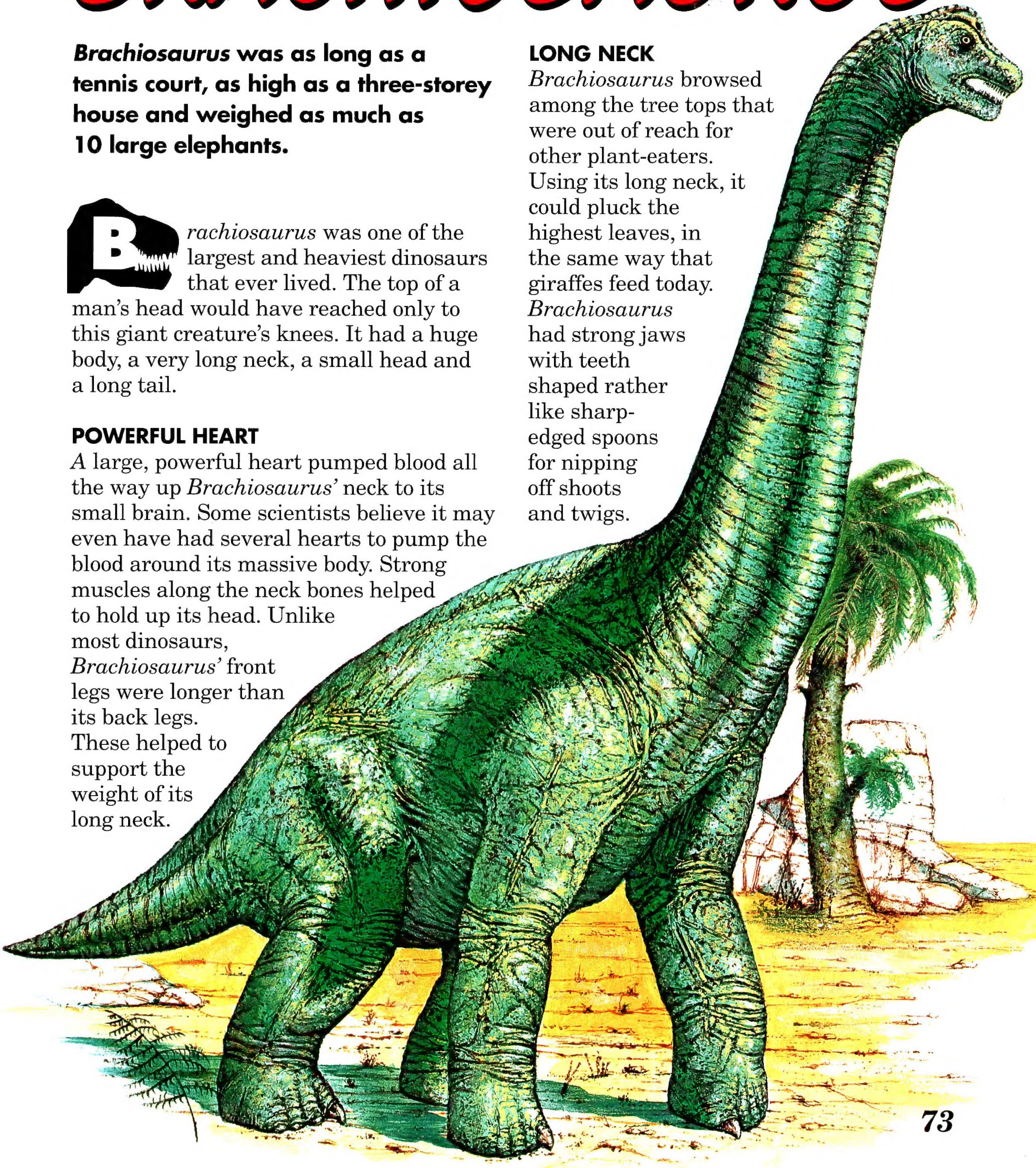
Brachiosaurus was one of the largest and heaviest dinosaurs that ever lived. The top of a man's head would have reached only to this giant creature's knees. It had a huge body, a very long neck, a small head and a long tail.

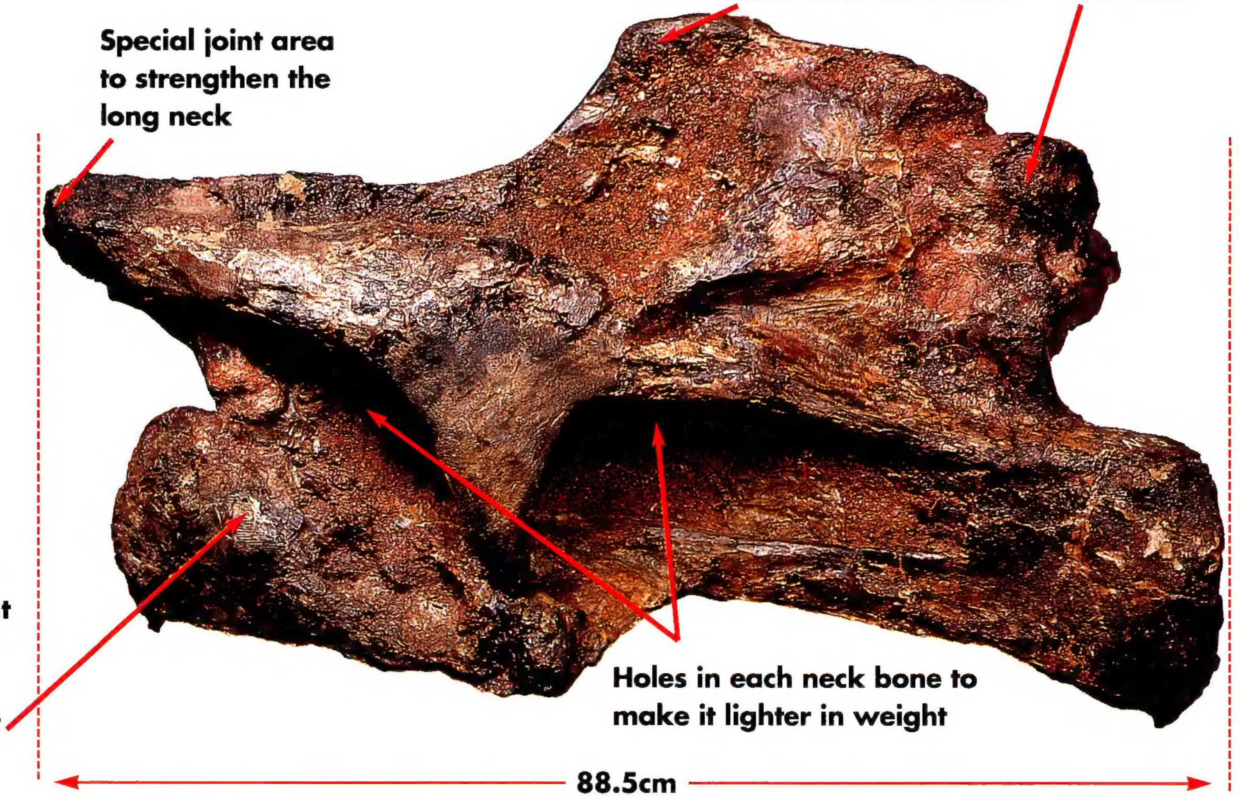
POWERFUL HEART

A large, powerful heart pumped blood all the way up *Brachiosaurus'* neck to its small brain. Some scientists believe it may even have had several hearts to pump the blood around its massive body. Strong muscles along the neck bones helped to hold up its head. Unlike most dinosaurs, *Brachiosaurus'* front legs were longer than its back legs. These helped to support the weight of its long neck.

LONG NECK

Brachiosaurus browsed among the tree tops that were out of reach for other plant-eaters. Using its long neck, it could pluck the highest leaves, in the same way that giraffes feed today. *Brachiosaurus* had strong jaws with teeth shaped rather like sharp-edged spoons for nipping off shoots and twigs.





***Brachiosaurus'* neck was 10m long and consisted of about 12 of these bones.**

Supporting muscles were attached to each neck bone here

Another special joint to strengthen the neck

Special joint area to strengthen the long neck

A ball and socket joint to provide easy movement

Holes in each neck bone to make it lighter in weight

STRAIGHT LEGS

Brachiosaurus' legs ended in short, thick toes. Underneath the bones of each foot was a pad which cushioned the legs against the jarring shock of its weight. *Brachiosaurus* held its legs straight underneath its body. This helped to support its enormous body weight. Elephants also hold their legs very straight beneath their bodies.

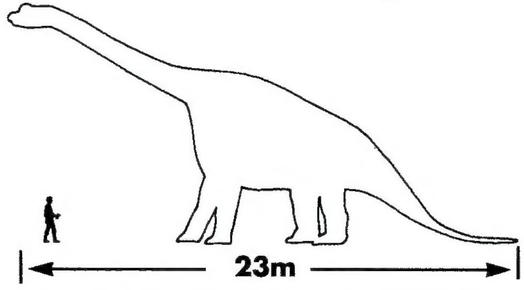
BIG APPETITE

Brachiosaurus needed to eat an enormous amount to supply enough energy for its huge body to grow and move about. An elephant eats about 150kg of food a day. *Brachiosaurus* may have eaten as much as 1,500kg of food a day – 10 times as much as today's giant! It probably travelled in herds and roamed over large areas of land each day to find fresh trees.

MONSTER FACTS

- **NAME:** *Brachiosaurus* (brak-ee-oh-saw-rus) means 'arm lizard'
- **SIZE:** up to 23m long and 12m high
- **FOOD:** leaves and shoots of trees
- **LIVED:** about 152 – 145 million years ago in the Late Jurassic Period in Tanzania and Algeria (Africa) and western North America

SIZE WISE



IT'S A FACT

AFRICAN DISCOVERY

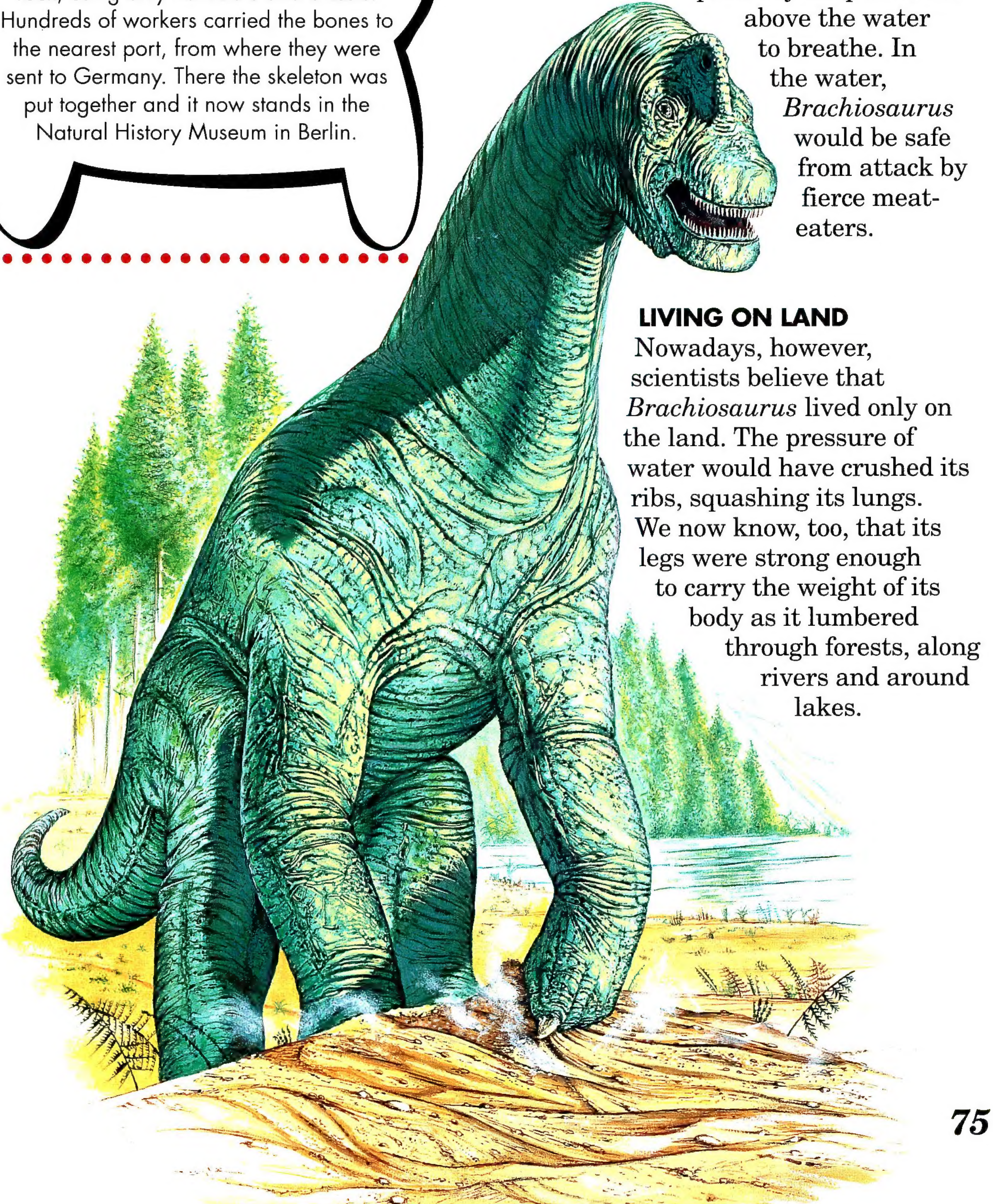
A nearly complete skeleton of *Brachiosaurus* was found in Tanzania, Africa, in 1907. It was chipped out of the rock, using only hammers and chisels. Hundreds of workers carried the bones to the nearest port, from where they were sent to Germany. There the skeleton was put together and it now stands in the Natural History Museum in Berlin.

SAFE FROM ATTACK

Because *Brachiosaurus* was so heavy, scientists once thought that it lived in lakes and rivers, where the water would support its massive weight. They thought that its legs would sink deep into the ground as it walked on land. Its nostrils were on the top of its head so it could probably keep its head above the water to breathe. In the water, *Brachiosaurus* would be safe from attack by fierce meat-eaters.

LIVING ON LAND

Nowadays, however, scientists believe that *Brachiosaurus* lived only on the land. The pressure of water would have crushed its ribs, squashing its lungs. We now know, too, that its legs were strong enough to carry the weight of its body as it lumbered through forests, along rivers and around lakes.



LESOTHOSAURUS

***Lesothosaurus* was one of the tiniest dinosaurs that ever lived, and a natural victim for predators.**

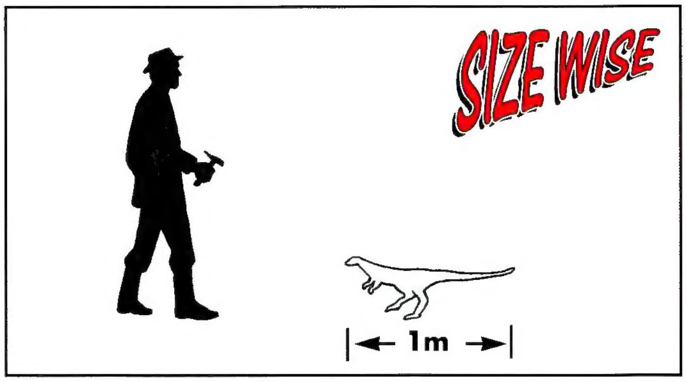
Lesothosaurus was only about 1m long, which is no bigger than a Labrador dog. This little dinosaur looked very much like a lizard with a long tail. It had a small head with a tough, beak-like mouth which it used to nip off leaves and plants for food. Inside its mouth, along its cheeks, were small teeth shaped like arrow heads. *Lesothosaurus* used these to chew up the tough and woody parts of plants before swallowing them.

BUILT FOR SPEED

Lesothosaurus had a body that was built for speed. It was light and nimble with long, slender back legs. Always on the alert for danger, it could run very fast to escape from meat-eating dinosaurs which tried to catch and kill it.

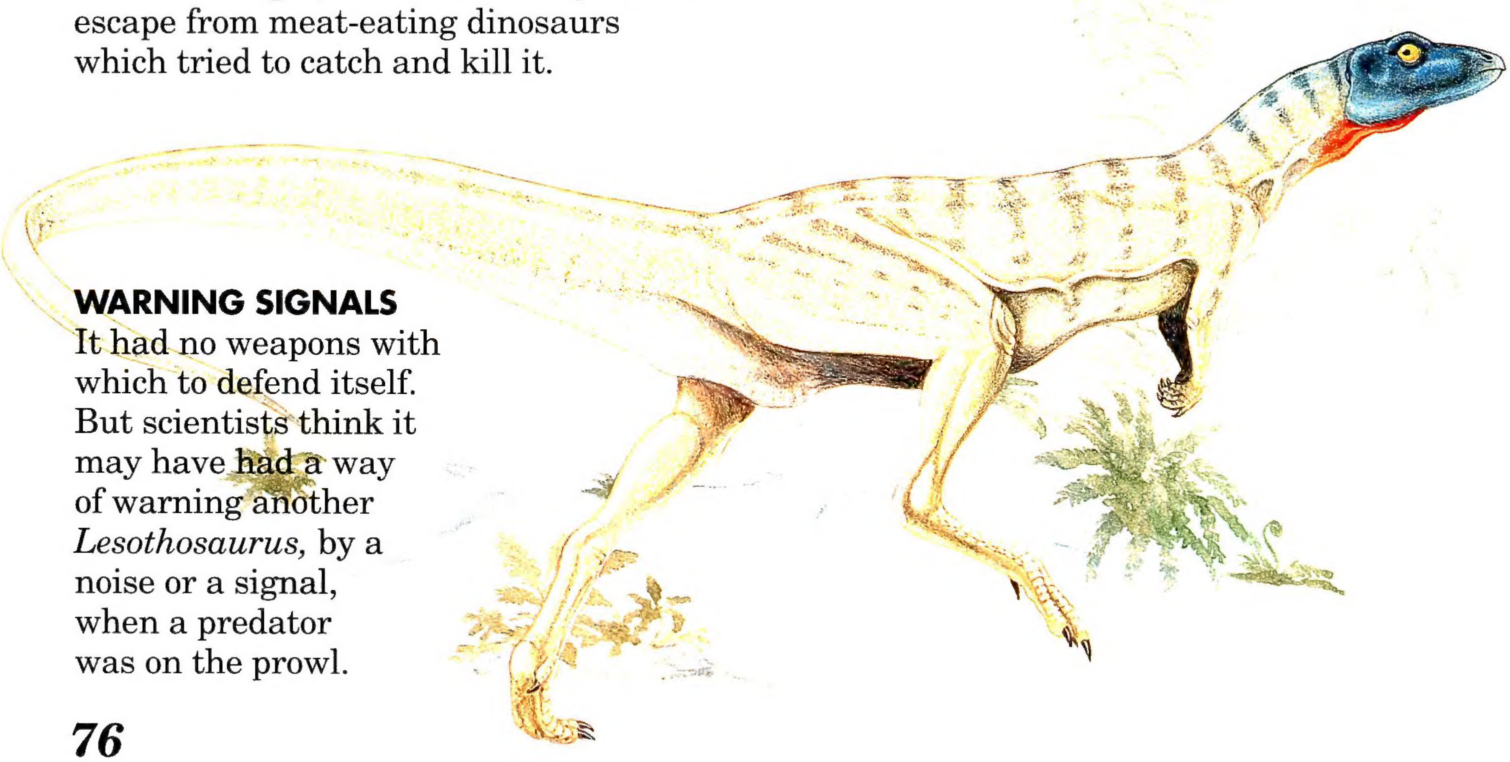
WARNING SIGNALS

It had no weapons with which to defend itself. But scientists think it may have had a way of warning another *Lesothosaurus*, by a noise or a signal, when a predator was on the prowl.



MONSTER FACTS

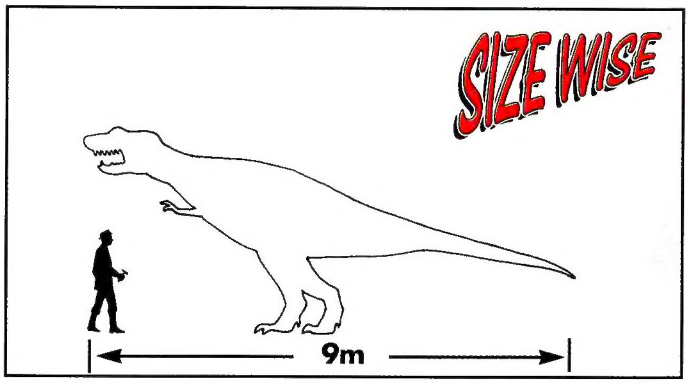
- **NAME:** *Lesothosaurus* (le-soo-too-saw-rus) means 'reptile from Lesotho'
- **SIZE:** up to 1m long
- **FOOD:** low-lying plants
- **LIVED:** about 190 million years ago in the Early Jurassic Period in Lesotho, southern Africa



ALBERTOSAURUS

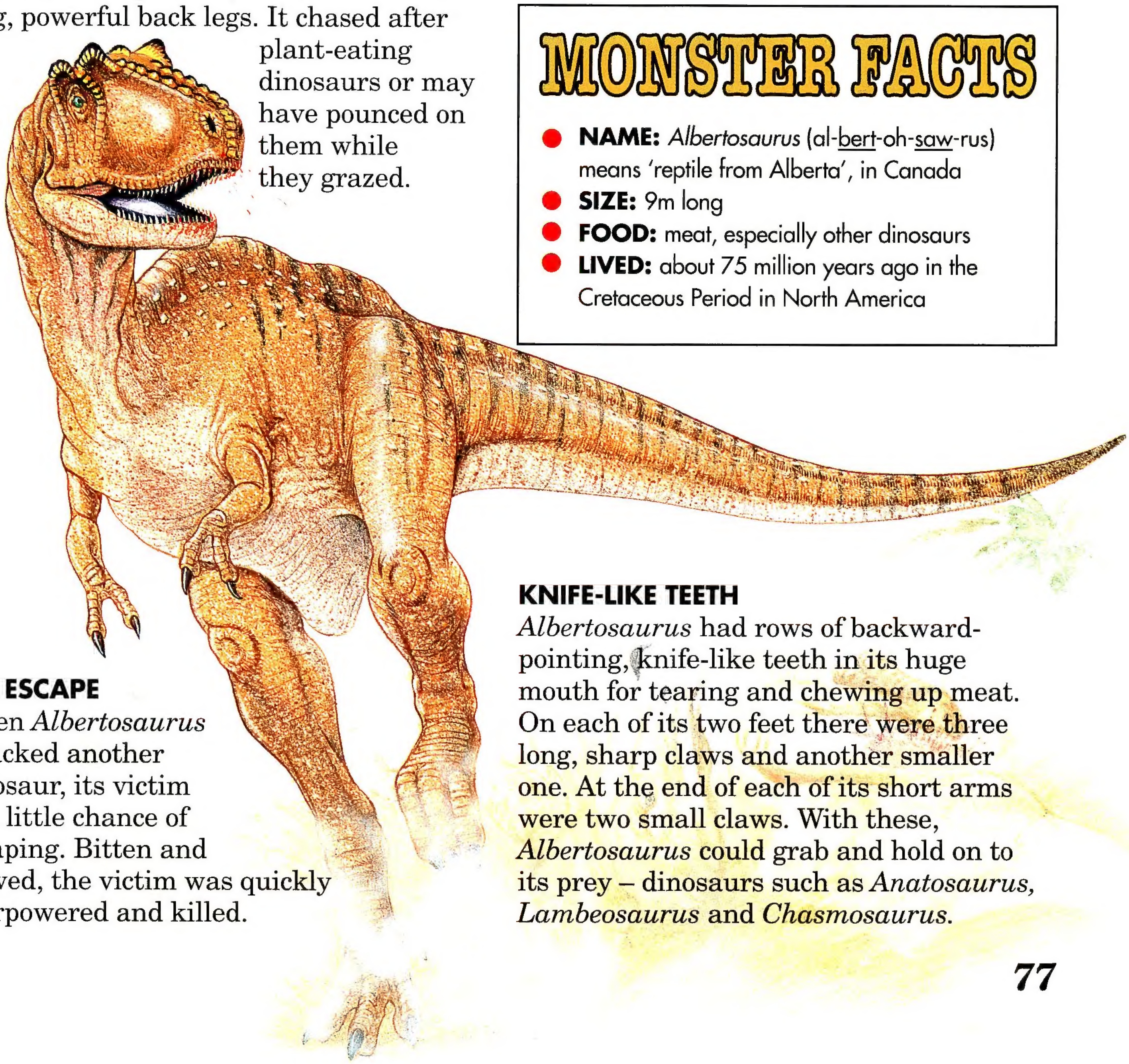
Small dinosaurs in the forests of North America had to watch out for the frightening form of *Albertosaurus*.

Albertosaurus was a fierce meat-eating dinosaur related to *Tyrannosaurus rex*. Although it was smaller than *T rex*, *Albertosaurus* probably ran faster on its long, powerful back legs. It chased after plant-eating dinosaurs or may have pounced on them while they grazed.



MONSTER FACTS

- **NAME:** *Albertosaurus* (al-bert-oh-saw-rus) means 'reptile from Alberta', in Canada
- **SIZE:** 9m long
- **FOOD:** meat, especially other dinosaurs
- **LIVED:** about 75 million years ago in the Cretaceous Period in North America



NO ESCAPE

When *Albertosaurus* attacked another dinosaur, its victim had little chance of escaping. Bitten and clawed, the victim was quickly overpowered and killed.

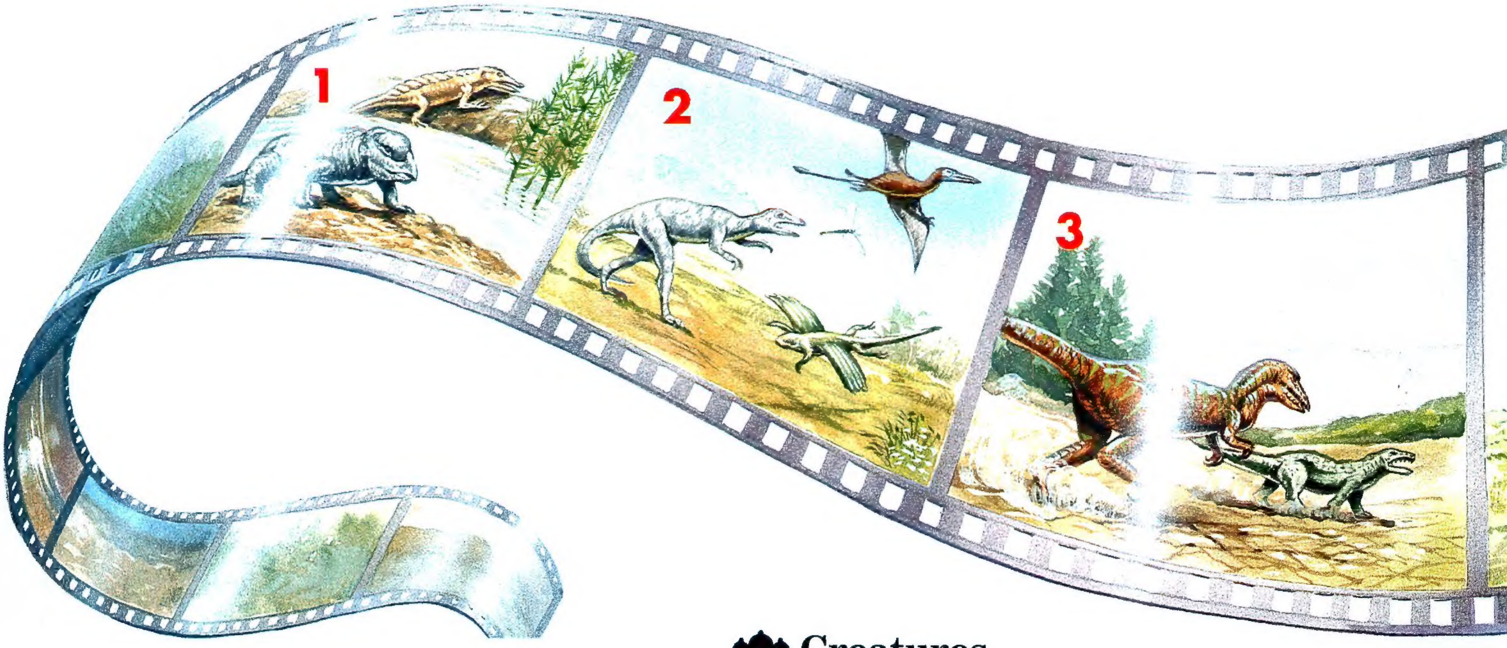
KNIFE-LIKE TEETH

Albertosaurus had rows of backward-pointing, knife-like teeth in its huge mouth for tearing and chewing up meat. On each of its two feet there were three long, sharp claws and another smaller one. At the end of each of its short arms were two small claws. With these, *Albertosaurus* could grab and hold on to its prey – dinosaurs such as *Anatosaurus*, *Lambeosaurus* and *Chasmosaurus*.

Rise of the dinosaurs

Dinosaurs first appeared on Earth in the Late Triassic Period. Follow the frames of the film and watch their story unfold.

The very first dinosaurs lived during the last part of the Late Triassic Period, about 225 to 204 million years ago. The climate was not the same as it is today. Near the seas and rivers, it was warm and damp. But away from the coasts, inland, it was much drier. The plants then were mostly ferns, horsetails (similar to bamboo) and cycads, which looked like stumpy palm trees. The dinosaurs were not alone in this strange landscape. Many other kinds of animals lived alongside them. They included the earliest turtles, crocodiles and pterosaurs.



1 Alongside the dinosaurs

One animal that shared the dinosaurs' world was the rhynchosaur. It looked like a pig, but had a strange beak made of bone. It also had jaws with plates of tiny, pimple-like teeth for crushing plants. Another creature was *Protosuchus*, the first true crocodile, which you can see here climbing on to the river bank. Its skin was just as knobbly as a crocodile's is today.

2 Creatures that flew

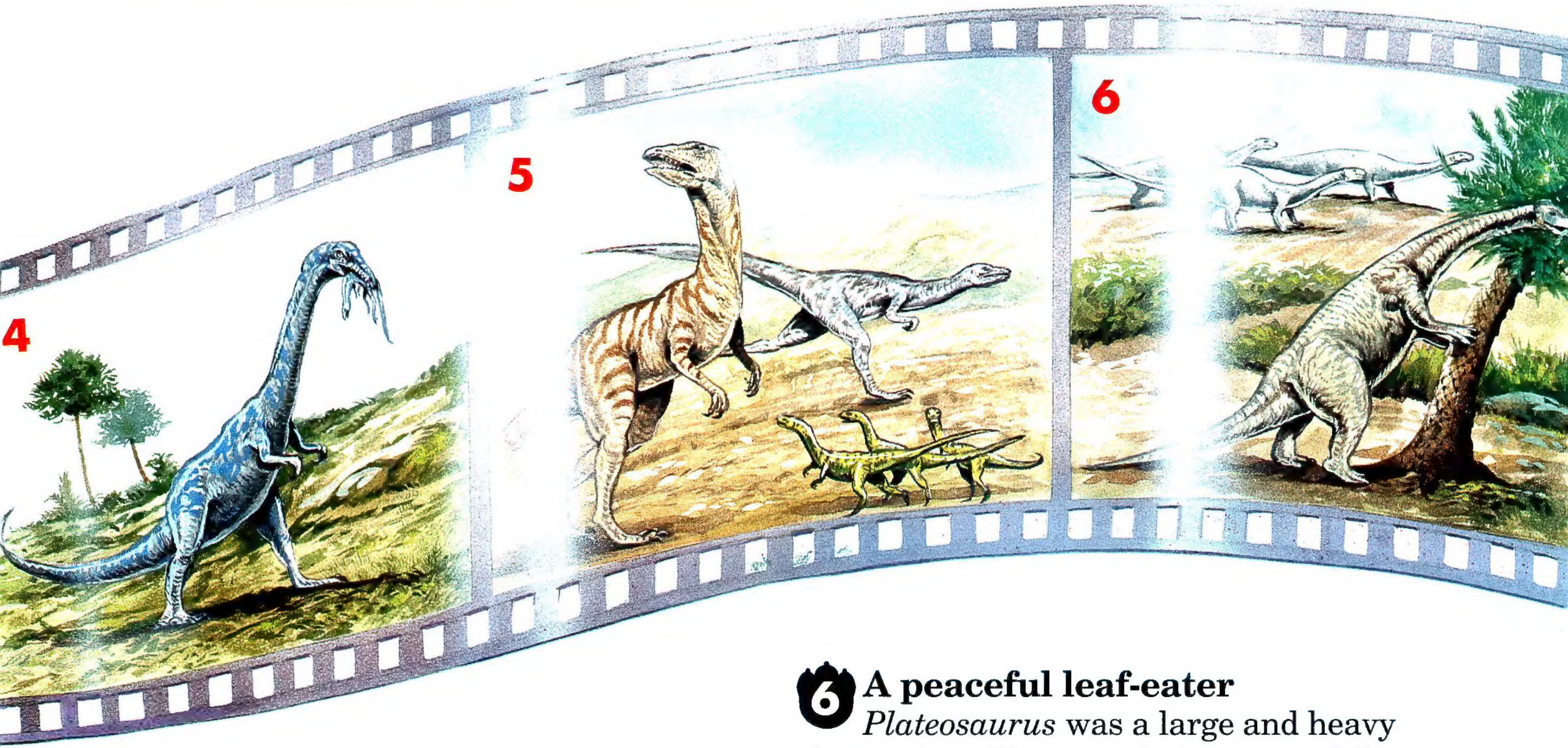
One of the earliest dinosaur-like creatures was *Lagosuchus*, seen running after a dragonfly. In the foreground is a gliding lizard, *Kuehneosaurus*. Above them flies a pterosaur – not a bird, but a flying reptile.

3 Chasing its prey

Herrerasaurus was an early meat-eating dinosaur. Here, it is chasing a thecodont, a reptile with pointed teeth.

What is? A CANNIBAL

When an adult animal eats others of its own species it is called a cannibal. This sometimes happens among present-day meat-eaters, such as male lions and crocodiles. They usually do this through hunger, and also to kill off possible rivals. The best-known cannibal dinosaur was *Coelophysis* of the Late Triassic Period.



4 Cannibal dinosaur

A fully grown *Coelophysis* is eating a young of its own species here. It was a vicious cannibal dinosaur. We know this from the bones of babies found in the stomachs of adults. *Coelophysis* was one of the smaller meat-eating dinosaurs. It was very slim and measured up to 3m long – about the length of a dolphin. It also ate other small creatures, such as lizards.

5 Speedy and small

The three tiny dinosaurs walking together are *Saltopus* – the smallest flesh-eating dinosaurs that ever lived. They were just 60cm long – the length of a cat. Beside them is *Staurikosaurus*. Its long legs were built for fast running. Beyond, runs speedy, 1m-long *Procompsognathus*.

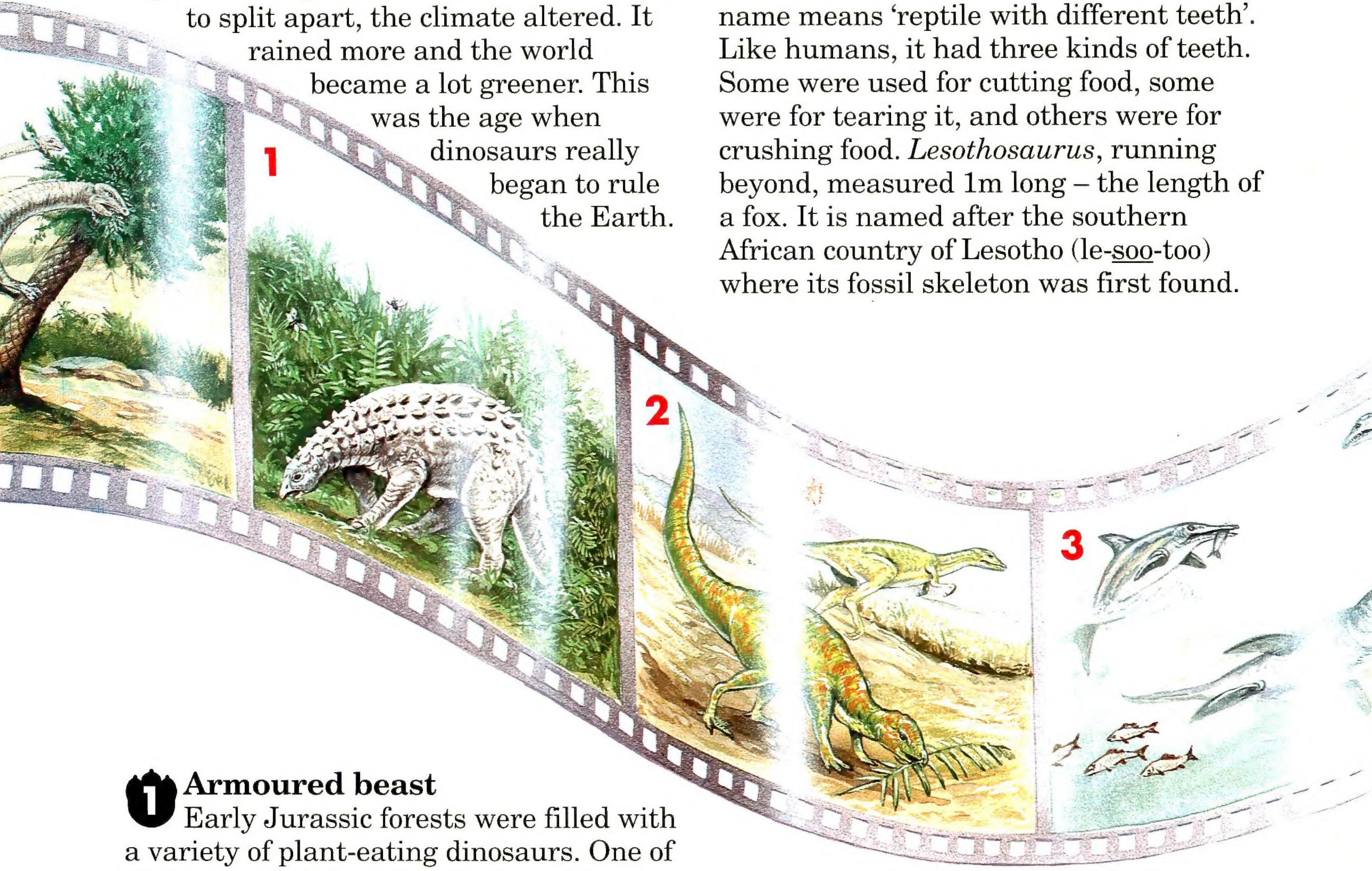
6 A peaceful leaf-eater

Plateosaurus was a large and heavy plant-eating dinosaur that measured 8m in length – which is about the length of a double-decker bus. It was able to stand on its hind legs, and with its long neck reached up to eat the leaves on fairly tall trees. It chopped up the vegetation with its leaf-shaped teeth that were spaced out along its long jaws. Palaeontologists believe that *Plateosaurus* usually went about in herds, like the one in the background, in order to protect itself and its young from meat-eating dinosaurs.

When dinosaurs ruled

Ferocious predators and quiet leaf-eaters – the dinosaurs of the Early Jurassic evolved into a dazzling variety of species.

In the Early Jurassic Period – which lasted from 204 to 184 million years ago – the world began to change. As the continents started to split apart, the climate altered. It rained more and the world became a lot greener. This was the age when dinosaurs really began to rule the Earth.



1 Armoured beast

Early Jurassic forests were filled with a variety of plant-eating dinosaurs. One of them was *Scelidosaurus*. It was a beast with heavy armour that protected it from fierce enemies. It had strong legs like pillars to support its heavy body, and four toes on each foot. *Scelidosaurus* also had a small head, and a horny beak which was filled with tiny, ridged teeth.

2 Two African plant-eaters

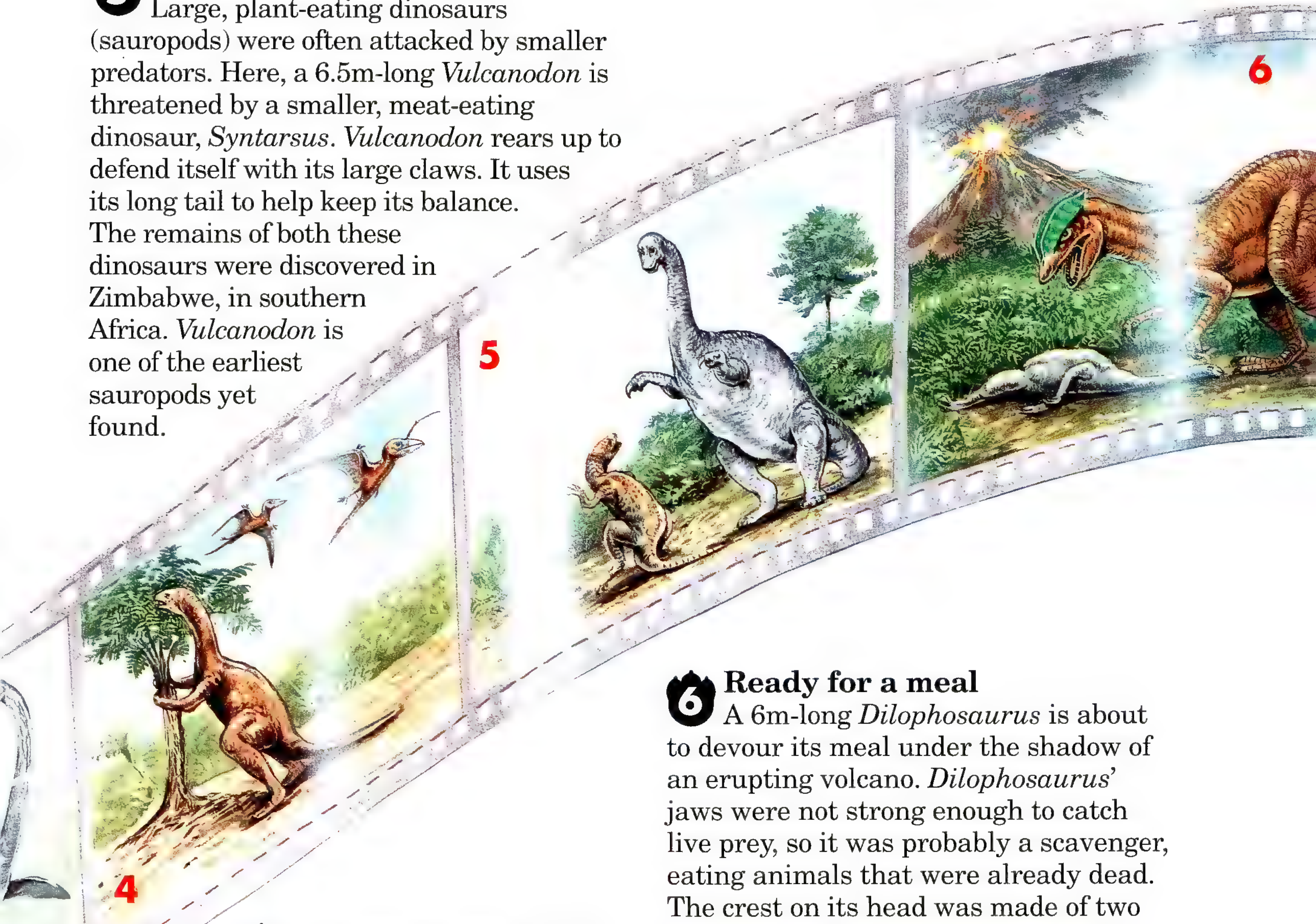
Among the smaller plant-eating dinosaurs of the Early Jurassic Period was *Heterodontosaurus* from South Africa. Its name means 'reptile with different teeth'. Like humans, it had three kinds of teeth. Some were used for cutting food, some were for tearing it, and others were for crushing food. *Lesothosaurus*, running beyond, measured 1m long – the length of a fox. It is named after the southern African country of Lesotho (le-soo-too) where its fossil skeleton was first found.

3 Life in the water

Creatures swam in the Early Jurassic seas. These were reptiles, not dinosaurs. One was the dolphin-like ichthyosaur, seen leaping in the air. Swimming alongside is a plesiosaur, *Elasmosaurus*.

5 A dinosaur attack

Large, plant-eating dinosaurs (sauropods) were often attacked by smaller predators. Here, a 6.5m-long *Vulcanodon* is threatened by a smaller, meat-eating dinosaur, *Syntarsus*. *Vulcanodon* rears up to defend itself with its large claws. It uses its long tail to help keep its balance. The remains of both these dinosaurs were discovered in Zimbabwe, in southern Africa. *Vulcanodon* is one of the earliest sauropods yet found.



4 Dinosaur from China

Lufengosaurus was about 6m long and nibbled the tops of tall plants by standing on its two powerful back legs. Its name comes from Lu-feng, the place in China where its remains were found. A pair of pterosaurs – flying reptiles – called *Dimorphodon* fly overhead. They had large skulls and deep snouts. Like modern birds, they also had very light, hollow bones, which were rather like drinking straws, so they were light enough to fly.

6 Ready for a meal

A 6m-long *Dilophosaurus* is about to devour its meal under the shadow of an erupting volcano. *Dilophosaurus*' jaws were not strong enough to catch live prey, so it was probably a scavenger, eating animals that were already dead. The crest on its head was made of two thin ridges of bone set side by side.

What is? A PLESIOSAUR

Plesiosaurs were long-necked members of a group of marine reptiles. They lived throughout the Age of the Dinosaurs. They had small heads and very long necks. One scientist described the plesiosaur as a 'snake threaded through a turtle'. The neck of the plesiosaur *Elasmosaurus* was over half the length of its 13m-long body.

GIANTS OF THE PAST

Huge and long-necked, *Brachiosaurus* spent its days browsing peacefully among tall trees. It had such a large appetite that it may have eaten up to 1,500kg of food each day! For safety, these gentle giants lived in herds.

BRACHIOSAURUS

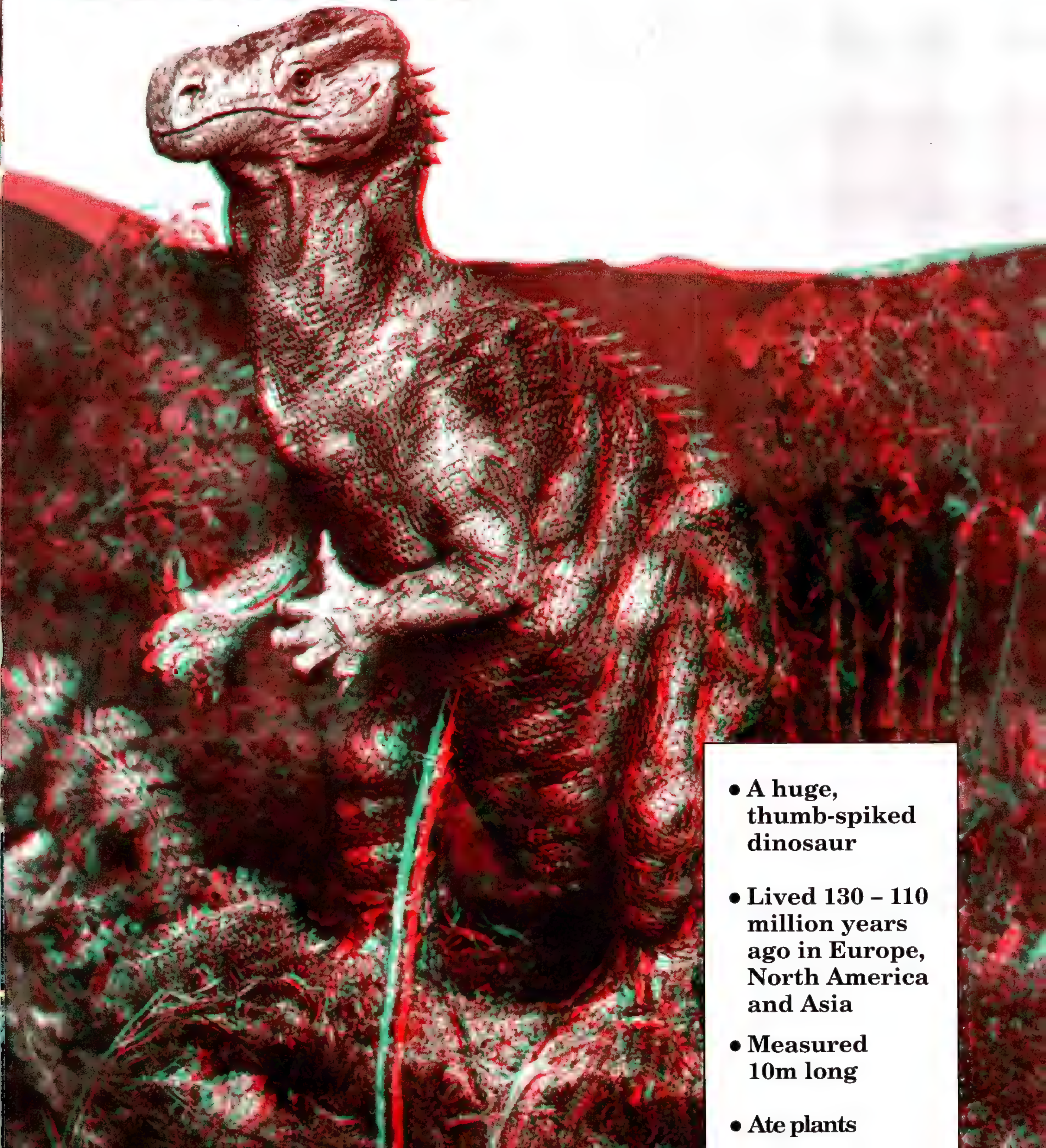
3-D Gallery 7

CENTROSAURUS

- A large-horned dinosaur
- Lived 85 – 75 million years ago in North America
- Measured 6m from head to tail
- Ate plants

3-D Gallery 8

IGUANODON



- A huge, thumb-spiked dinosaur
- Lived 130 – 110 million years ago in Europe, North America and Asia
- Measured 10m long
- Ate plants

Spot the difference

Although these dinosaurs appear similar, look hard and you will see the differences between them.

Bony plates and spikes were features of all these dinosaurs. But they looked different on each of them. *Dacentrurus*, for instance, had pairs of spines right along its back. *Kentrosaurus* had an extra spine over each hip. And as well as bony plates on its back, *Ankylosaurus* had a club at the end of its tail.

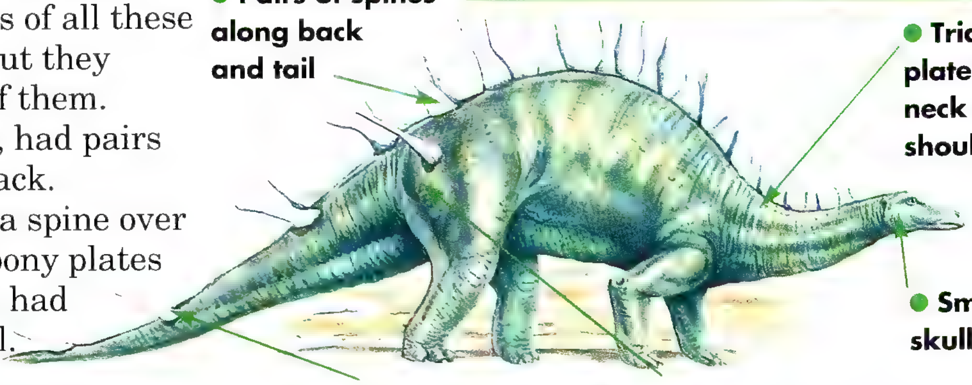
What is? AN ANKYLOSAUR

Ankylosaurs were a family of plant-eating dinosaurs that moved a bit like gigantic rhinos. They had knobs and spines along their backs. These formed a sort of bony armour to protect them from meat-eating predators. Some ankylosaurs, such as *Ankylosaurus* and *Pinacosaurus*, also had clubs at the end of their tails that could be swung against enemies with great force.

PLATES AND SPINES

Kentrosaurus

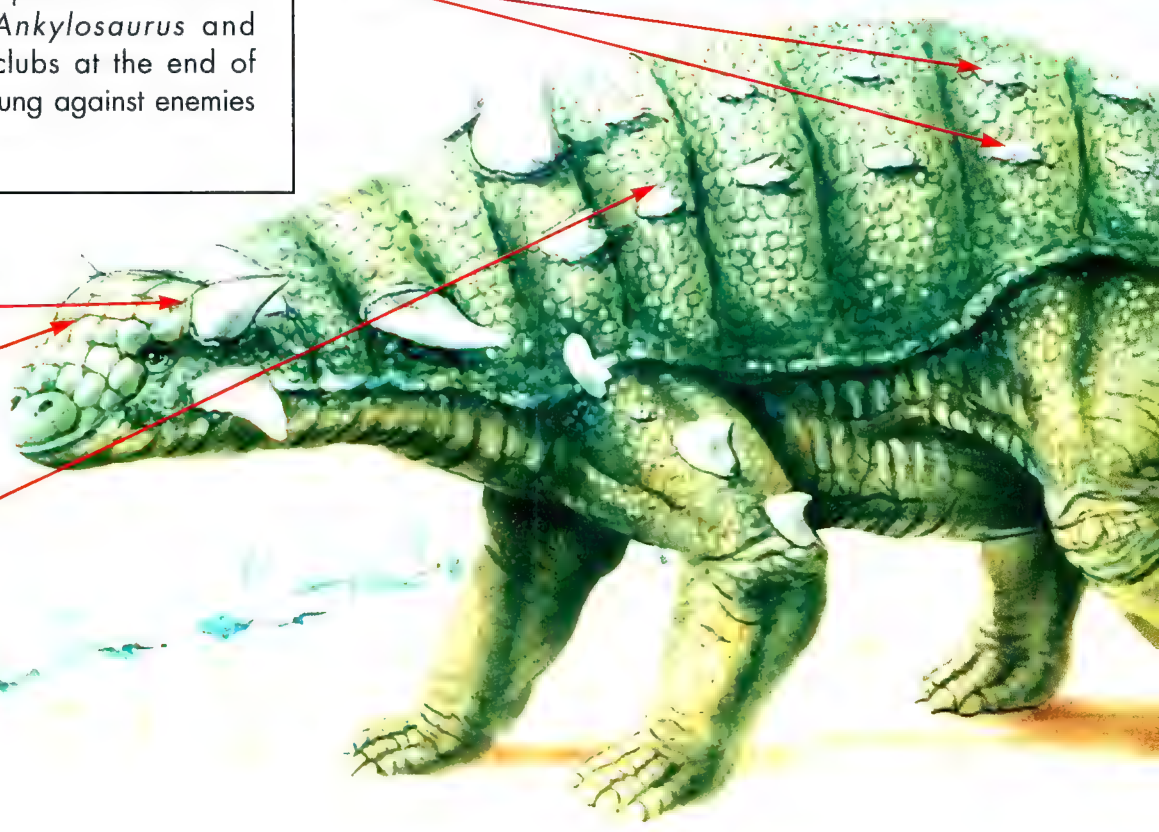
- Small plates on neck area
- About 2.5m long
- One extra spine over each hip


Pairs of spines along back and tail
Triangular plates on neck and shoulders
Small skull
Long spiny tail
Long spine over each hip

TANK-SIZED AND CLUB-TAILED

Ankylosaurus

- Bony plates on armoured body
- Up to 19m long
- Large club at the end of its tail


Pairs of spines along back and tail
Small triangular plates on neck area
Small skull
Bumpy, shell-like back

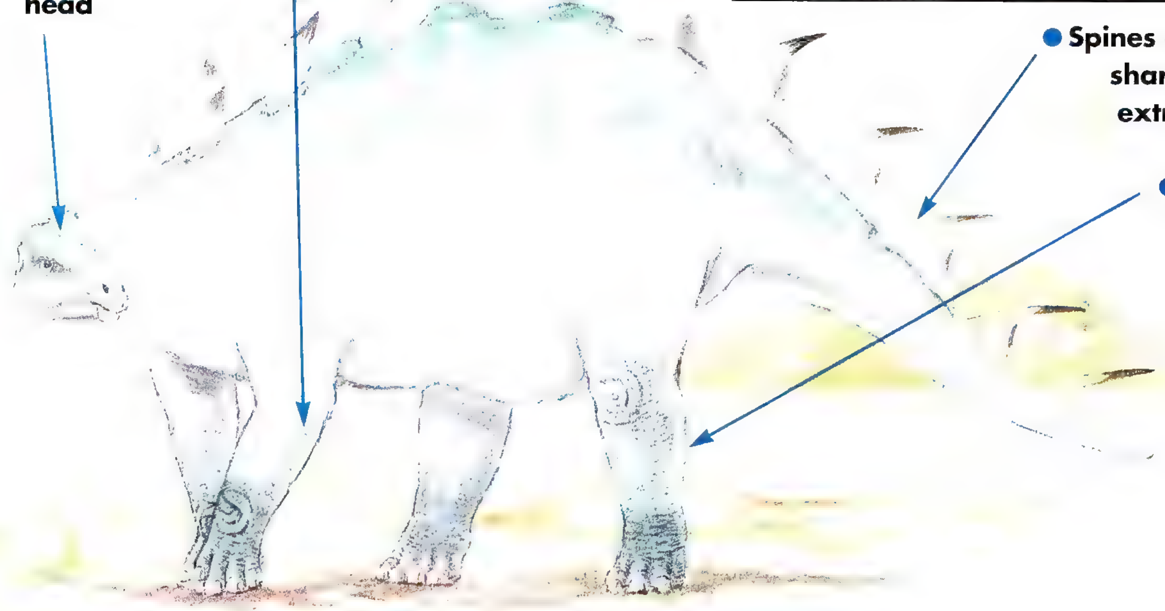
LARGE AND SPINY

Dacentrurus

- **An early stegosaur**
- **Paired spines along its back**
- **About 7m long**

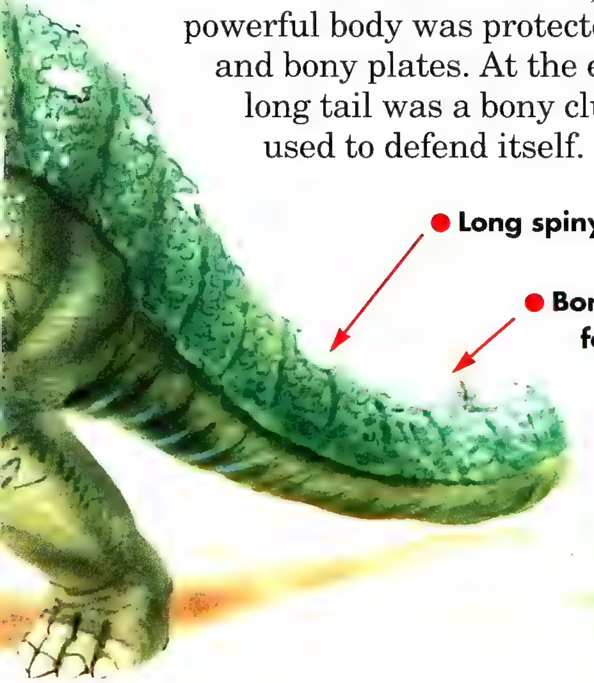
What is? A STEGOSAUR

Stegosaurs were medium-sized, four-footed dinosaurs, with rows of spikes or plates along the middle of their backs, and sometimes on their hips and tails. Skeletons have been found in North America, Asia, Europe and Africa. Examples of these dinosaurs include *Dacentrurus*, *Kentrosaurus* and *Stegosaurus*.


● Robust forearms for grabbing at branches
● Spines extending right along the back
● Small, pointed head
● Spines on tail had sharp edges for extra protection
● Back legs longer than front legs – for rearing up when feeding

TANK-SIZED AND CLUB-TAILED

Ankylosaurus (an-ky-loh-saw-rus) grew up to 19m long and was about the height of a man. It was built like a tank, and its powerful body was protected by spines and bony plates. At the end of its long tail was a bony club which it used to defend itself.


● Long spiny tail
● Bony club, used for defence

LARGE AND SPINY

Dacentrurus (da-sen-troo-rus) was a herbivore and walked on all-fours. It had spines on its back, and on its tail. The spines had sharper edges than those of other stegosaurs such as *Stegosaurus* and *Kentrosaurus*. Skeletons of *Dacentrurus* have been found in England, France and Portugal.

PLATES AND SPIKES

Kentrosaurus (ken-tro-saw-rus) was a stegosaur about half the height of a man and 2.5m long. Small, triangular plates led down its neck and shoulders. Pairs of spines ran down its back and tail. On both sides of its body, at the hip, there was an extra spine that stuck out sideways.

Rebuilding a dinosaur

Scientists spend hours rebuilding dinosaur skeletons so that they can see more clearly what the animals were like when they were alive.

Studying and rebuilding a dinosaur's skeleton is an exciting piece of detective work. From the skeleton, scientists can tell how the animal moved – whether it walked on two or four legs – and what it ate – whether it was a plant-eater or a meat-eater. They can also tell what the animal's body looked like.

BODY BUILDING

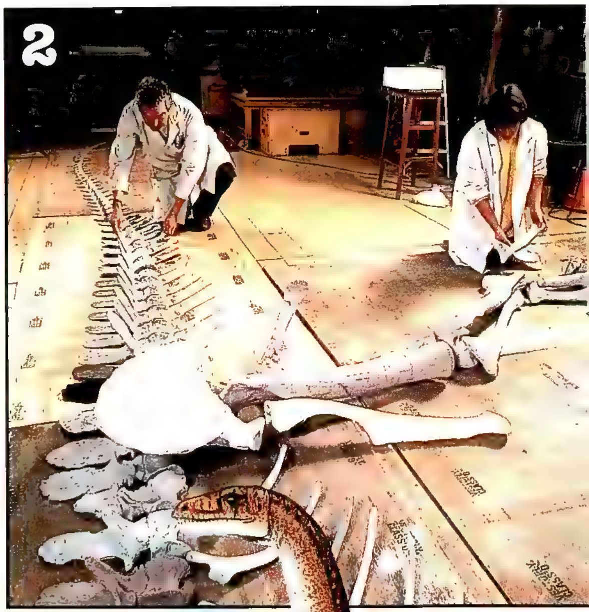
There are marks on some of the bones where muscles were attached which give the experts clues as to how big the muscles were and how much flesh was on the body. With this information, artists can build up a picture of what the dinosaur looked like by adding muscles, flesh and skin to the skeleton either in a drawing or by making a model.

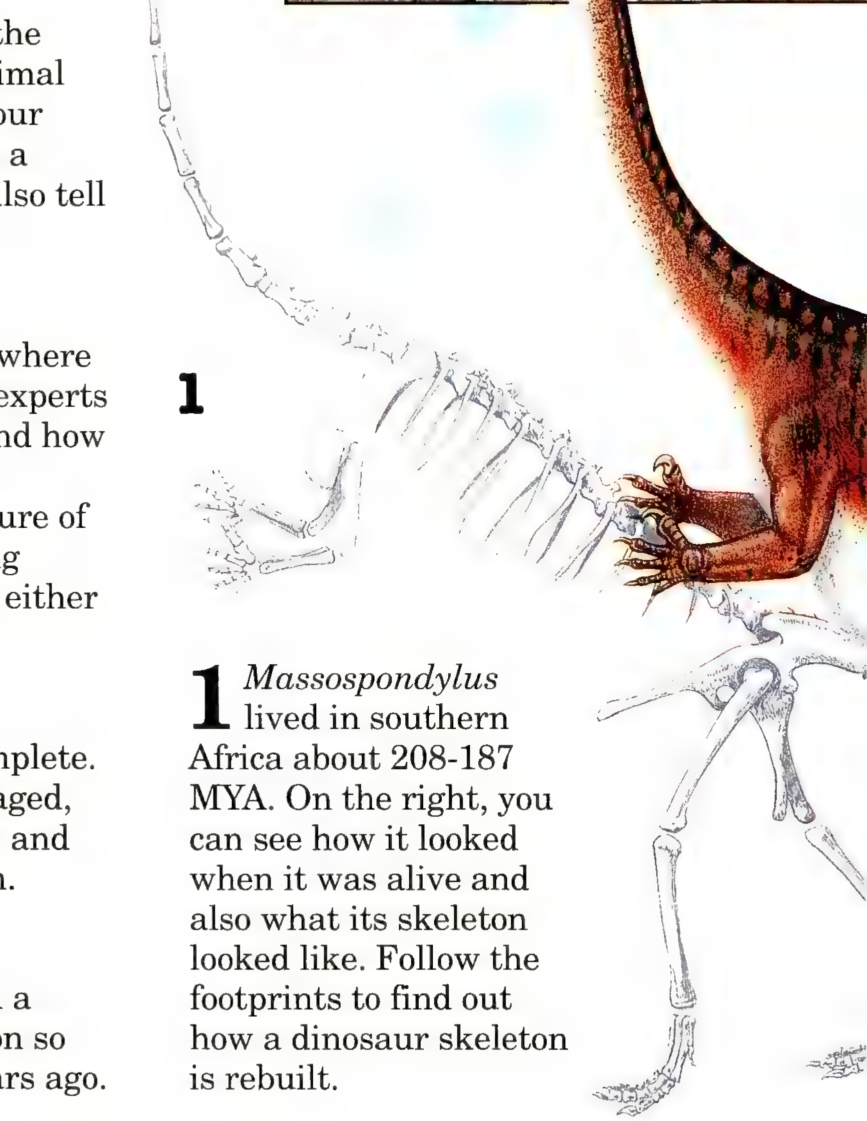
REPLACEMENT BONES

Dinosaur skeletons are not usually complete. If any bones are missing or badly damaged, replacements are made from fibreglass and these are used to complete the skeleton.

LIFE-LIKE

Scientists go to great trouble to rebuild a dinosaur's skeleton in a natural position so that it will look as it did millions of years ago.





1 *Massospondylus* lived in southern Africa about 208-187 MYA. On the right, you can see how it looked when it was alive and also what its skeleton looked like. Follow the footprints to find out how a dinosaur skeleton is rebuilt.

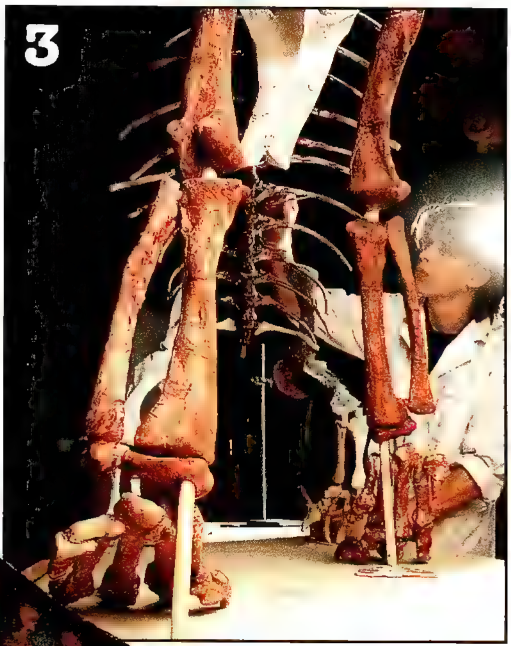
2 All the bones, including fibreglass replacements, are laid out in their correct order. Scientists study the bones of other animals, including dinosaurs, to see how the bones of the skeleton fit together.

What is? A SUSPENDED SKELETON

Some dinosaur skeletons are now being put together in a new way. Instead of fitting the bones together and resting the final skeleton on a stand, scientists suspend the bones from the museum's ceiling, using steel wires. The bones look as if they are joined, but are really hanging from the ceiling, like a giant puppet.

3 To hold the bones in place, an engineer makes an armature. This is a steel framework to support the bones. The leg bones are put on the armature first, then the spine and ribs are added. The dinosaur is beginning to take shape.

3



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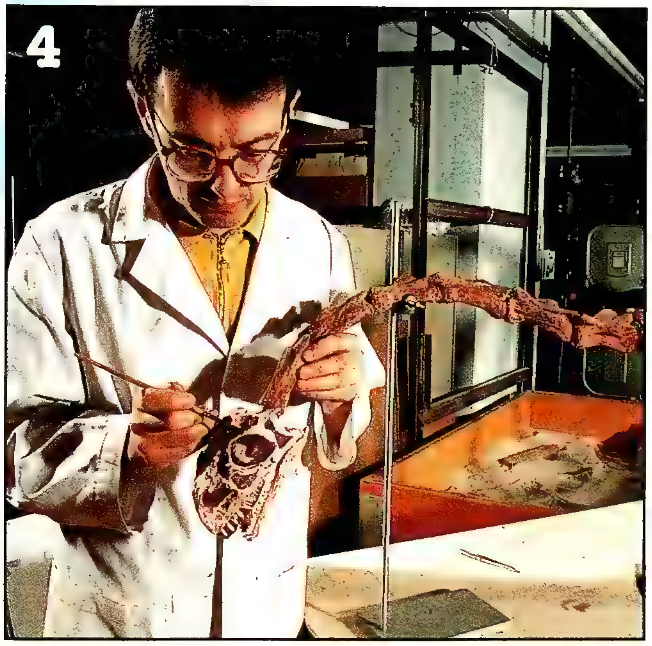


4 Once the legs, spine and ribs of the skeleton are mounted on the armature, the tail and skull are added. Here, fibreglass replacement bones are being painted to match the true bone colouring. The skeleton is now complete and ready to display in a museum.

Robot dinosaurs

Computer experts, designers, engineers and palaeontologists combine their skills to produce robotic dinosaur models that move, fight – and even roar.

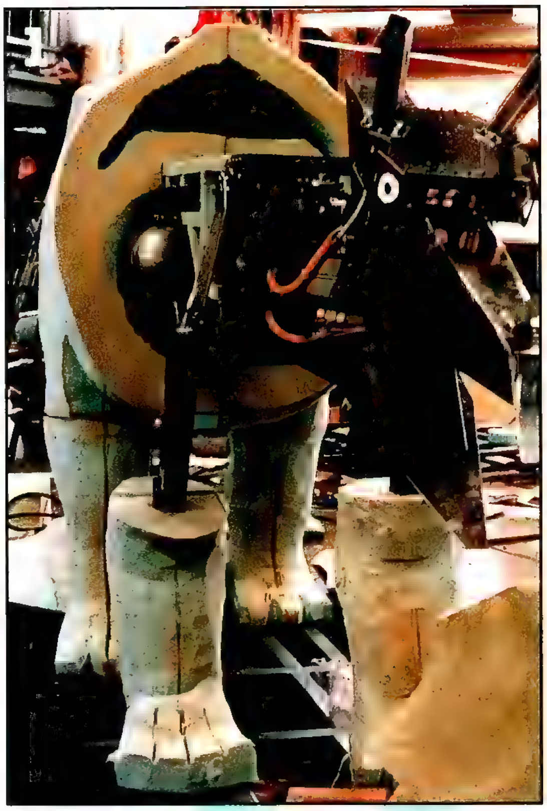
We cannot bring dinosaurs back to life, but robots in museums give an idea of how these creatures moved.

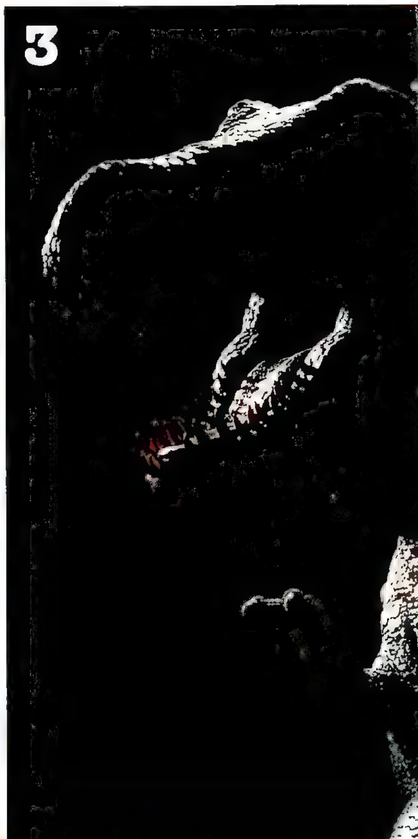
1 Inside a robot *Triceratops,* the metal skeleton contains the working parts. Air, pushed through cylinders makes the robot move. A computer controls it.

2 The body of a robot dinosaur is sculpted from polyurethane foam, which is light and easy to carve and mould.

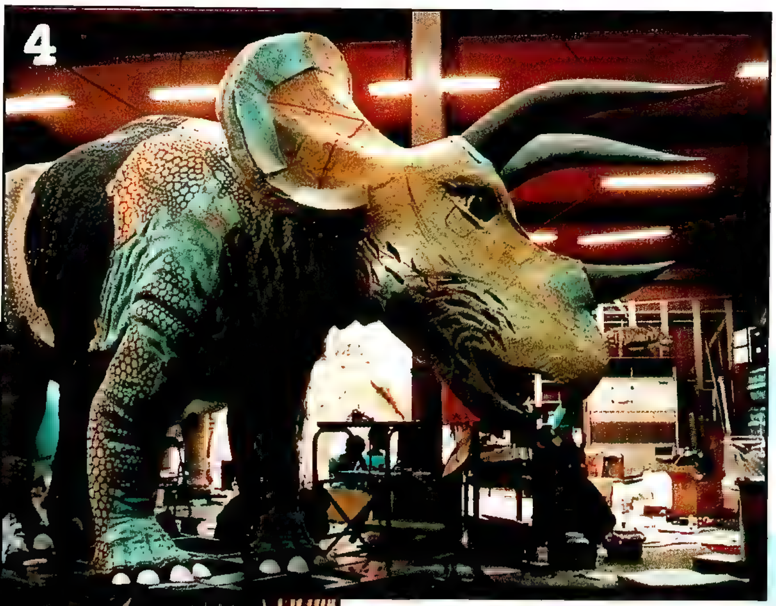
Is it true that air operates the robot dinosaurs?

Yes. Air is used to make the dinosaur robots move. Its flow is controlled by a computer. The air is compressed (put under pressure). Inside the robot, the force of the air operates the dinosaur's joints and makes the robots move silently.





3 *T rex* snarls and bares its teeth, it is almost possible to feel its hot breath. But it is only a robot. However, model makers and engineers do a lot of research by reading, talking to scientists and visiting museums, so that the robot dinosaurs they create are as realistic and accurate as possible.

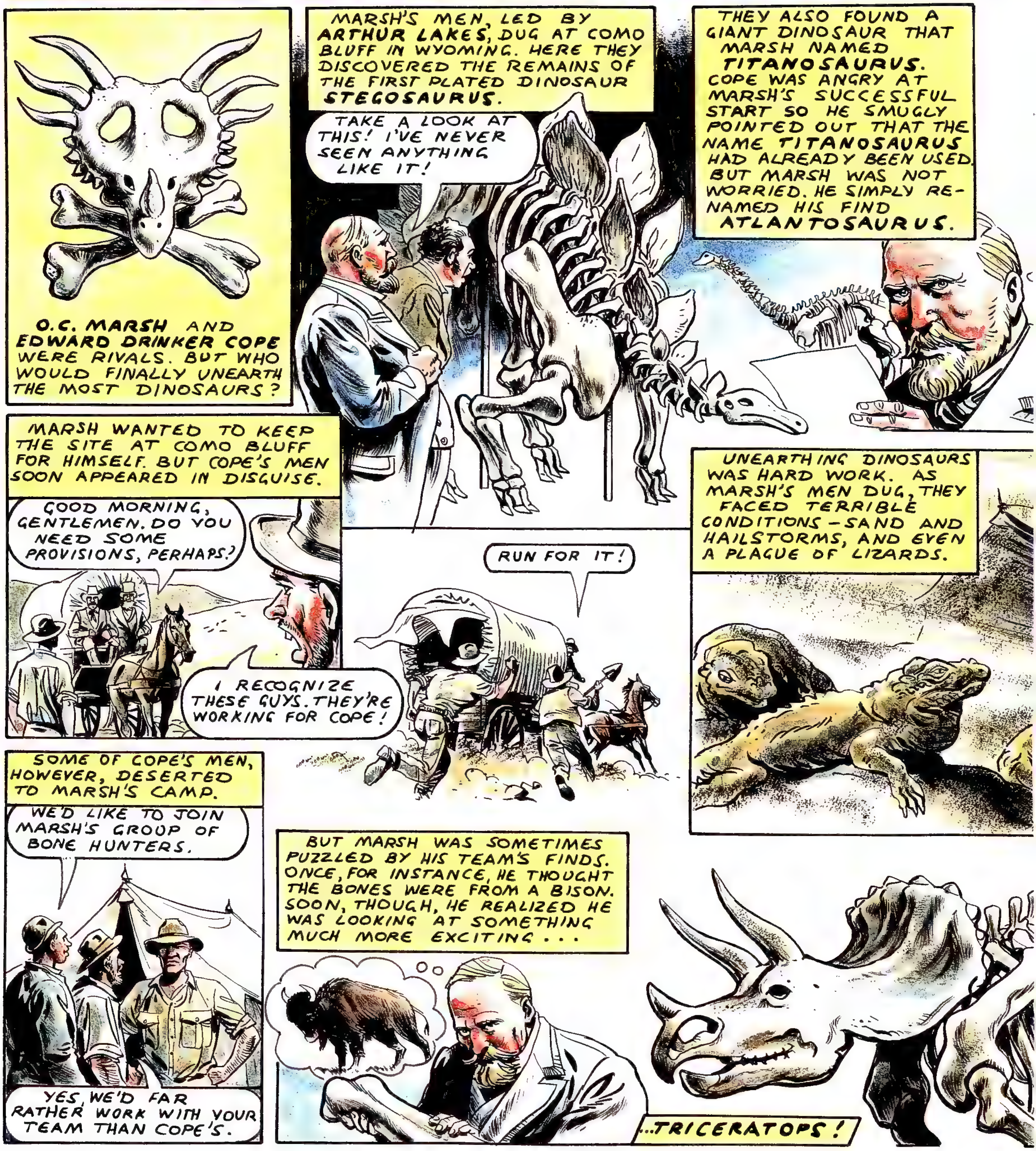


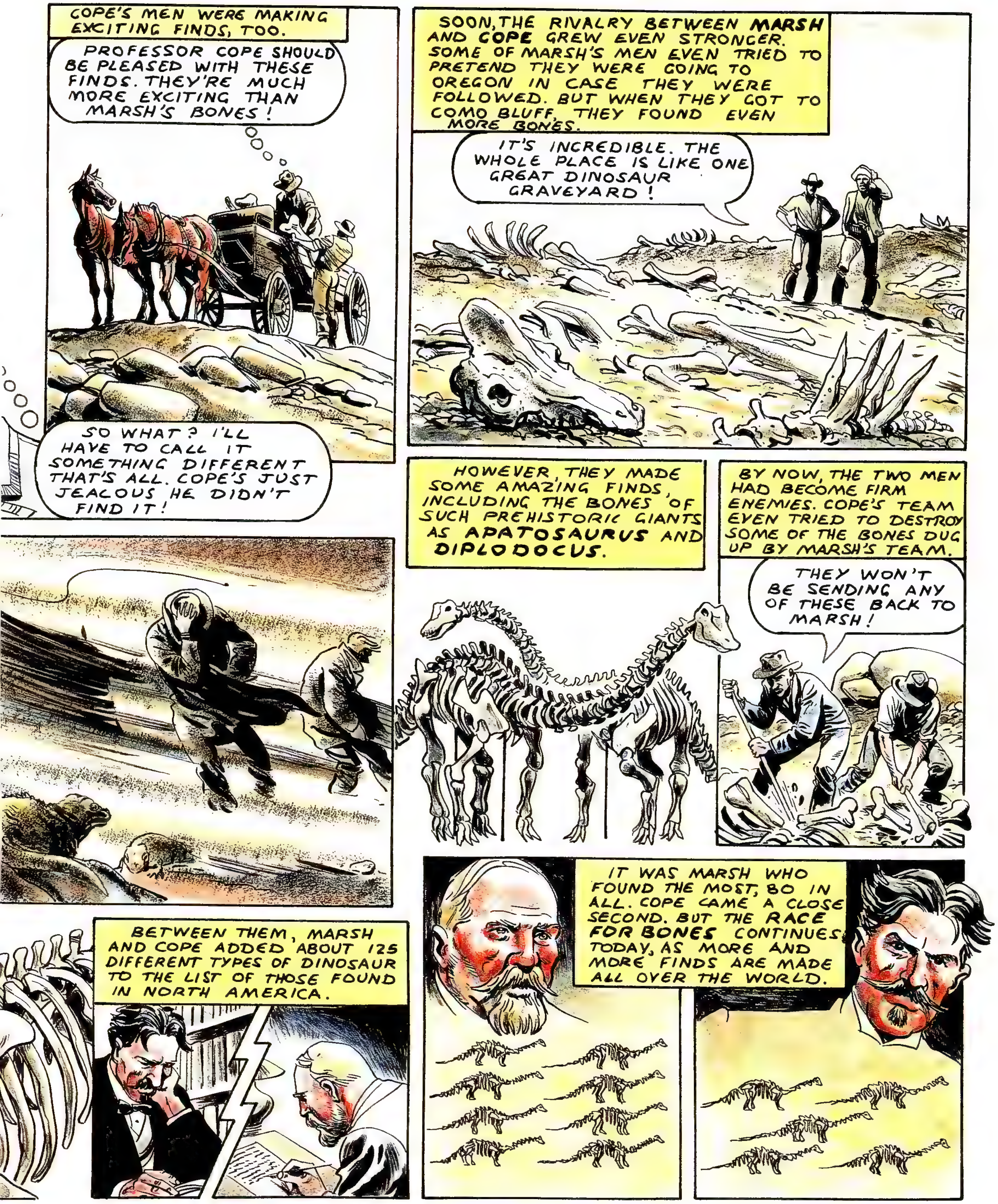
4 The dinosaur robots are correct in every detail. Here, an artist recreates the animal's rough skin by melting the surface of the polyurethane body to create scales and bony plates. The skin is also painted.

5 In the workshops, the final touches are made to a very realistic *Triceratops* robot. A soundtrack of dinosaur noises is added to the computer programme that controls the robot. Soon, thousands of visitors will hear its ferocious bellow echoing round the museum.

THE BONE WARS

PART TWO


O.C. MARSH AND EDWARD DRINKER COPE WERE RIVALS. BUT WHO WOULD FINALLY UNEARTH THE MOST DINOSAURS?
MARSH'S MEN, LED BY ARTHUR LAKES, DUG AT COMO BLUFF IN WYOMING. HERE THEY DISCOVERED THE REMAINS OF THE FIRST PLATED DINOSAUR STEGOSAURUS.
TAKE A LOOK AT THIS! I'VE NEVER SEEN ANYTHING LIKE IT!
THEY ALSO FOUND A GIANT DINOSAUR THAT MARSH NAMED TITANOSAURUS. COPE WAS ANGRY AT MARSH'S SUCCESSFUL START SO HE SMUGLY POINTED OUT THAT THE NAME TITANOSAURUS HAD ALREADY BEEN USED. BUT MARSH WAS NOT WORRIED. HE SIMPLY RENAMED HIS FIND ATLANTOSAURUS.
MARSH WANTED TO KEEP THE SITE AT COMO BLUFF FOR HIMSELF. BUT COPE'S MEN SOON APPEARED IN DISGUISE.
GOOD MORNING, GENTLEMEN. DO YOU NEED SOME PROVISIONS, PERHAPS?
I RECOGNIZE THESE GUYS. THEY'RE WORKING FOR COPE!
RUN FOR IT!
UNEARTHING DINOSAURS WAS HARD WORK. AS MARSH'S MEN DUG, THEY FACED TERRIBLE CONDITIONS – SAND AND HAILSTORMS, AND EVEN A PLAGUE OF LIZARDS.
SOME OF COPE'S MEN, HOWEVER, DESERTED TO MARSH'S CAMP.
WE'D LIKE TO JOIN MARSH'S GROUP OF BONE HUNTERS.
YES, WE'D FAR RATHER WORK WITH YOUR TEAM THAN COPE'S.
BUT MARSH WAS SOMETIMES PUZZLED BY HIS TEAM'S FINDS. ONCE, FOR INSTANCE, HE THOUGHT THE BONES WERE FROM A BISON. SOON, THOUGH, HE REALIZED HE WAS LOOKING AT SOMETHING MUCH MORE EXCITING . . .
...TRICERATOPS!



COPE'S MEN WERE MAKING EXCITING FINDS, TOO.

PROFESSOR COPE SHOULD BE PLEASED WITH THESE FINDS. THEY'RE MUCH MORE EXCITING THAN MARSH'S BONES!
SO WHAT? I'LL HAVE TO CALL IT SOMETHING DIFFERENT THAT'S ALL. COPE'S JUST JEALOUS HE DIDN'T FIND IT!

SOON, THE RIVALRY BETWEEN **MARSH** AND **COPE** GREW EVEN STRONGER. SOME OF MARSH'S MEN EVEN TRIED TO PRETEND THEY WERE GOING TO OREGON IN CASE THEY WERE FOLLOWED. BUT WHEN THEY GOT TO COMO BLUFF, THEY FOUND EVEN MORE BONES.

IT'S INCREDIBLE. THE WHOLE PLACE IS LIKE ONE GREAT DINOSAUR GRAVEYARD!

HOWEVER, THEY MADE SOME AMAZING FINDS, INCLUDING THE BONES OF SUCH PREHISTORIC GIANTS AS **APATOSAURUS** AND **DIPLODOCUS**.

BY NOW, THE TWO MEN HAD BECOME FIRM ENEMIES. COPE'S TEAM EVEN TRIED TO DESTROY SOME OF THE BONES DUG UP BY MARSH'S TEAM.

BETWEEN THEM, MARSH AND COPE ADDED ABOUT 125 DIFFERENT TYPES OF DINOSAUR TO THE LIST OF THOSE FOUND IN NORTH AMERICA.

IT WAS MARSH WHO FOUND THE MOST, 80 IN ALL. COPE CAME A CLOSE SECOND. BUT THE **RACE FOR BONES** CONTINUES TODAY, AS MORE AND MORE FINDS ARE MADE ALL OVER THE WORLD.

Improve and test your knowledge with...

Dino Fact File

Triceratops holds all the answers. See how you score in the quiz.

Mixed diet

Some dinosaurs ate both animals and plants. Creatures that do this are called 'omnivores'.

1 How are robot models of dinosaurs powered?

a) by compressed air
b) by hammers
c) by strings

2 How large was *Lesothosaurus*?

a) about the size of an elephant
b) only as big as a Labrador dog
c) as large as a two-storey house

3 Who or what was *Albertosaurus* named after?

a) Alberta, in Canada, where it was found
b) Prince Albert, Queen Victoria's husband
c) the scientist, Albert Einstein

4 What is an armature?

a) a sort of gun
b) the frame on which a skeleton is rebuilt
c) a bone in a dinosaur's arm

5 What is used to replace bones that are missing when rebuilding a skeleton?

a) plaster of Paris
b) fibreglass
c) modelling clay

Found by hikers

The bones of Seismosaurus (or 'earth-shaker') were first found in 1979. Four hikers came across them in Albuquerque, New Mexico, USA.

Dinosaurs in Belgium

In 1878, coal miners in Belgium came across a stack of fossil bones and teeth. They were from the dinosaur Iguanodon. In all, 39 skeletons were found.

The biggest dig

The world's biggest dinosaur dig began in Tanzania in 1907 and lasted four years. Among the thousands of bones that were found were complete skeletons of Brachiosaurus, Dicraeosaurus and Kentrosaurus.

An English graveyard

Despite its small size, more different types of dinosaur fossils have been found in England than in any other country in the world.

6 Who won the Bone Wars by finding the most dinosaurs?

a) O. C. Marsh
b) Edward Drinker Cope
c) Andrew Carnegie

7 Which of the following dinosaurs was a cannibal?

a) *Coelophysis*
b) *Stegosaurus*
c) *Brachiosaurus*

8 What is a cycad?

a) a prehistoric fish
b) a sort of fossil
c) a tree, like a palm

9 What was the climate like near the sea in the Late Triassic?

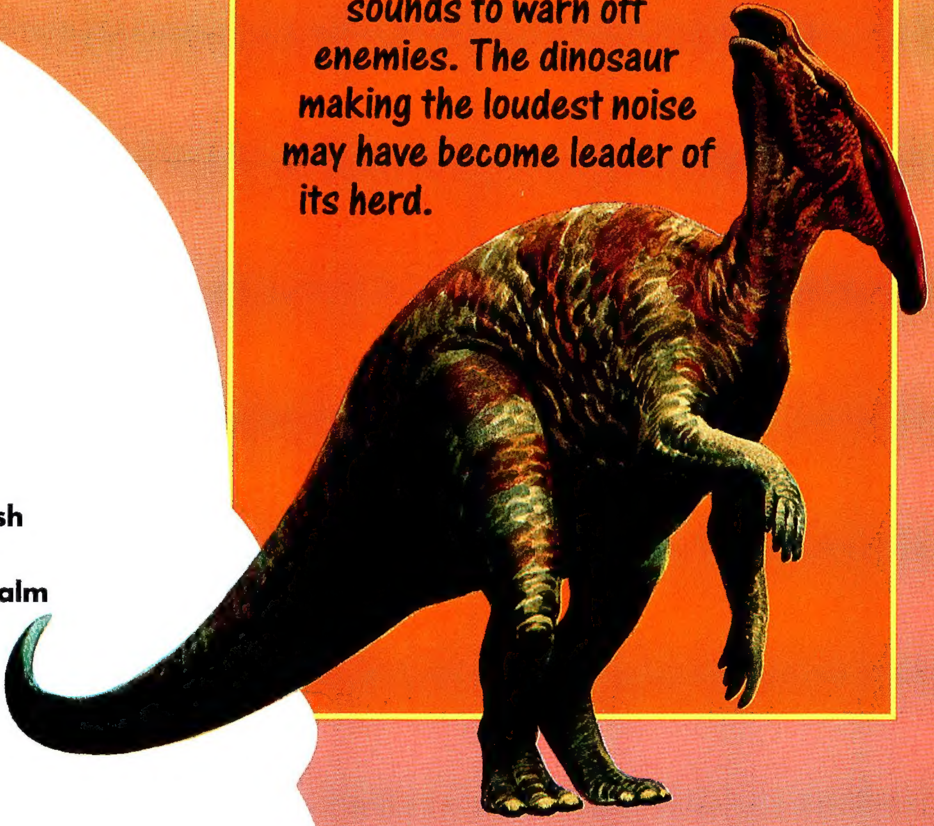
a) warm and wet
b) dry and hot
c) cold and icy

10 Why did *Brachiosaurus* eat as much as 1,500kg of food every day?

a) it was greedy
b) to prevent plants from over-growing
c) because of its huge size and energy needs

Noisy creatures

Some dinosaurs, such as Parasaurolophus, probably used their crests for making bellowing sounds to warn off enemies. The dinosaur making the loudest noise may have become leader of its herd.



Bone medicine

Centuries ago, before they realised the value of dinosaur bones as prehistoric finds, the Chinese often ground them up for use as medicine to treat all sorts of illnesses.

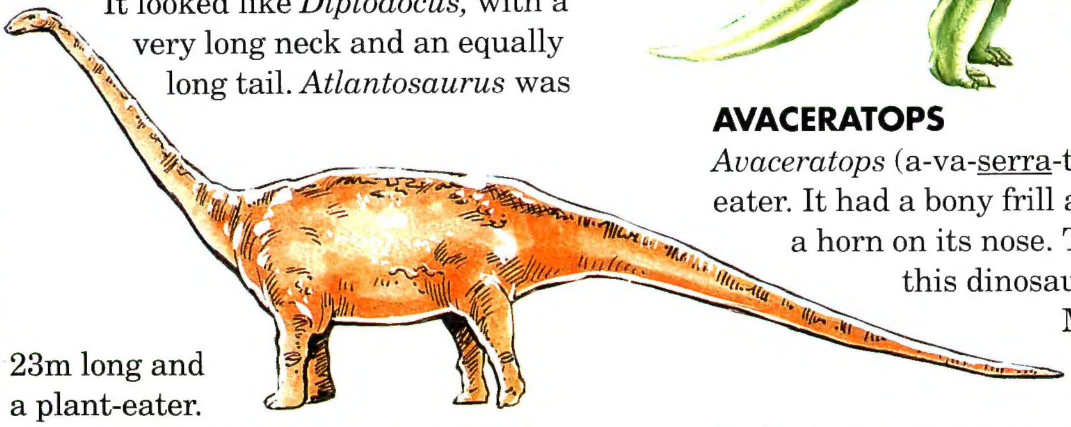
Dinosaur nurseries

Palaeontologists working in Canada and the USA have discovered areas that seem to have been used as dinosaur nurseries. Here, adults probably shared the care of their young.

Answers to the questions on inside back cover

ATLANTOSAURUS **150 MYA**

Atlantosaurus (at-lant-oh-saw-rus) was one of the first dinosaurs to be discovered during the 19th-century Bone Wars. It looked like *Diplodocus,* with a very long neck and an equally long tail. *Atlantosaurus* was 23m long and a plant-eater. It lived in North America during the Late Jurassic Period. Professor O.C. Marsh named this dinosaur *Atlantosaurus* – which means 'Atlas reptile' – after the Greek god, Atlas.



ATLASCOPCOSAURUS **130 MYA**

This dinosaur was found in Dinosaur Cove, in southern Australia. *Atlascopcosaurus* (at-las-cop-co-saw-rus) was a small creature, and the few remains found suggest that it was similar to *Hypsilophodon.* It was named after Atlas Copco Corporation, a business, which paid for the expedition that found it.

AUBLYSODON **70 MYA**

A small relative of *Tyrannosaurus rex, Aublysodon* (aw-blee-soh-don) was first named by the palaeontologist Joseph Leidy in 1869. This meat-eating dinosaur lived in North America and seems to have had a sharper snout than *T rex.*

AVACERATOPS **90 MYA**

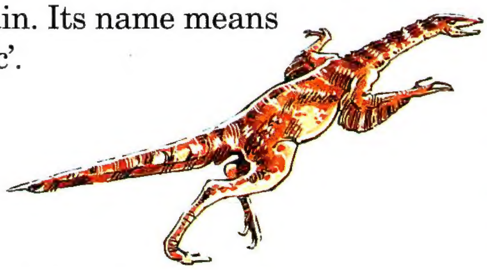
Avaceratops (a-va-serra-tops) was a plant-eater. It had a bony frill around its neck and a horn on its nose. The first bones of this dinosaur were found in Montana, North America, in 1981. Its discoverer, Dr Dodson, called it 'Ava' after his wife. *Avaceratops* was about 2m long and 1m tall.

AVALONIA **210 MYA**

Avalonia (a-va-loh-nee-ah) was the name given to dinosaur remains found in Somerset, England. The bones found were of the backbone, hips and legs.

AVIMIMUS **70 MYA**

Avimimus (av-ee-mime-us), was first found in 1981 in southern Mongolia, near China. It was a small bird-like creature and may have had short wings. It had big eyes and a large brain. Its name means 'bird mimic'.



MYA = MILLION YEARS AGO

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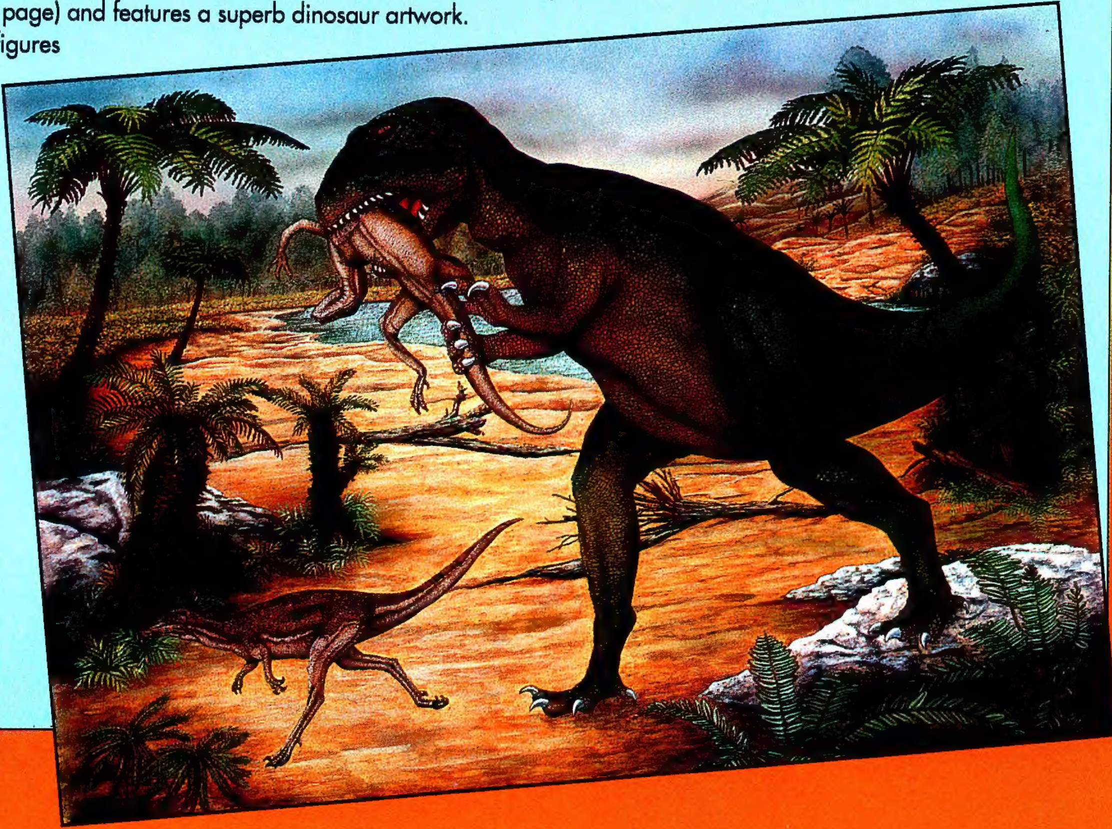
THE DINOSAURS! POSTER COLLECTION

Have you ever wanted to fill your room with dinosaurs? Now you have your chance – with the *Dinosaurs!* POSTER COLLECTION. Each poster is a 820 x 570mm (nearly eight times the size of this page) and features a superb dinosaur artwork. You'll find vital facts and figures about the dinosaur on the back – PLUS a look at some other prehistoric animals. The first poster is ferocious *Allosaurus*.

A GIGANTIC DINOSAUR ON YOUR WALL



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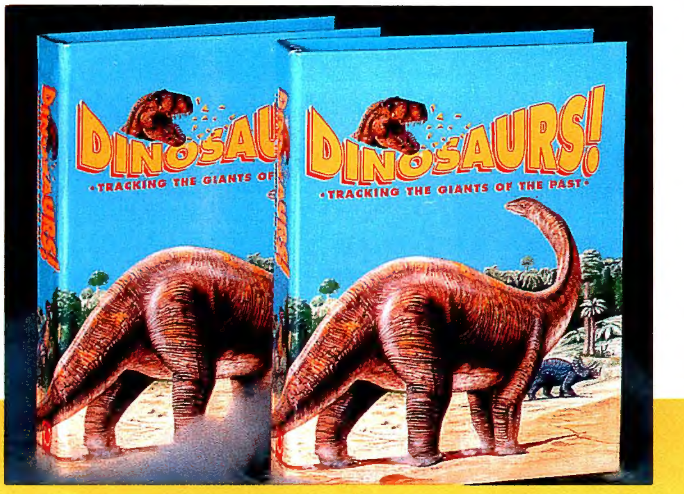

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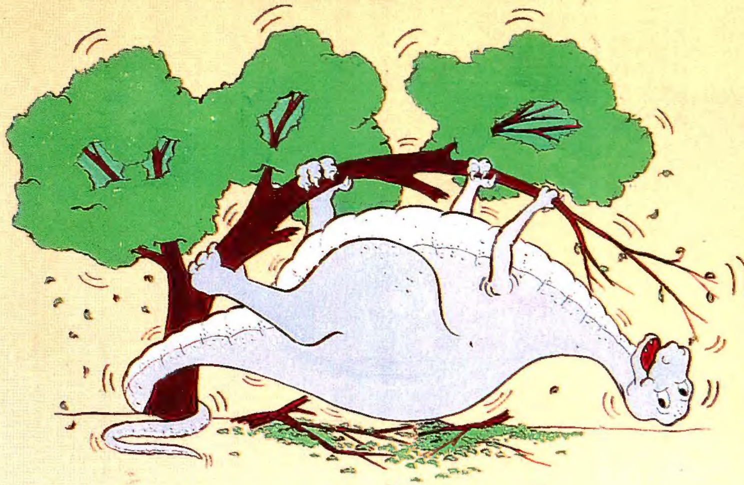
ANSWERS TO DINO FACT FILE QUESTIONS: 1.a 2.b 3.a 4.b 5.b 6.a 7.a 8.c 9.a 10.c

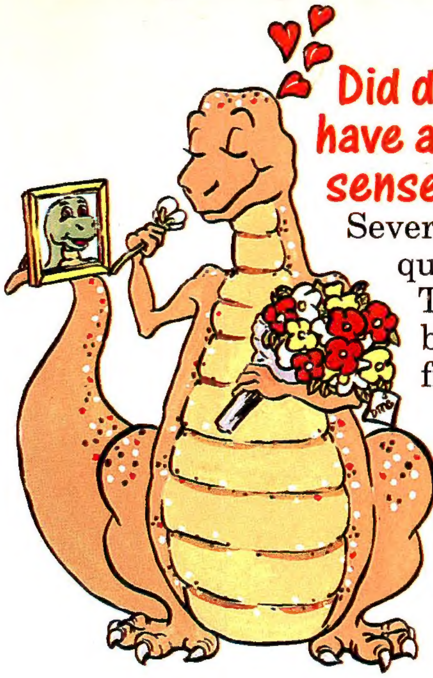
ASK THE EXPERT

Dr. David Norman of Cambridge University answers your dinosaur questions



Did dinosaurs climb trees?

Some of the smaller dinosaurs were very light and agile, and may well have scampered among the trees. The great majority of dinosaurs, however, were far too big to have been comfortable in trees. Many of the giant plant-eaters may even have pushed over trees to get at juicy leaves growing near the top.

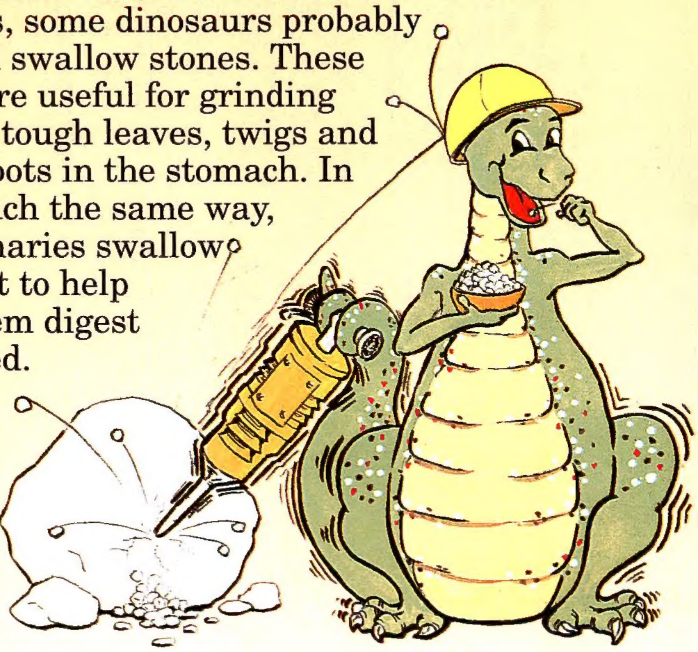


Did dinosaurs have a good sense of smell?

Several dinosaurs had quite large nostrils. The part of the brain (near the front) associated with a sense of smell was also large. So it seems likely that many had a reasonable sense of smell.

Did dinosaurs swallow stones?

Yes, some dinosaurs probably did swallow stones. These were useful for grinding up tough leaves, twigs and shoots in the stomach. In much the same way, canaries swallow grit to help them digest seed.



Is there such a creature as a Brontosaurus?

A few years ago, there was a great deal of fuss about a new set of American stamps. One of the stamps was incorrectly labelled *Brontosaurus*. This wonderful name means 'thunder lizard' and was invented by Professor O.C. Marsh in 1879. But a similar skeleton had been named *Apatosaurus* two years earlier. So the name *Apatosaurus* is now correct, and the name *Brontosaurus* is no longer used.

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